

**Mr. Lee Scherer**

**Oral History**

**Kennedy Space Center**

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**Interviewer: Lisa Malone**  
**Associate Director**  
**External Relations and**  
**Business Development**

Transcriptionist: Sharon Youngquist

1 Lisa Malone: All right. Today is November the 7<sup>th</sup>, 2002. We're here at Kennedy Space  
2 Center and we're talking with the second center director of Kennedy Space Center, Lee Scherer,  
3 and my name is Lisa Malone. I am the associate director of the External Relations and Business  
4 Development Office. So we're going to go ahead and start with the questions and. . . .

5

6 Lee Scherer: You say you don't want to interrupt the tape, is that [right]?

7

8 Malone: Well, we can. We don't. . .

9

10 Scherer: But, you'd rather not. I wanted to be sure, if I say some answer and I say, wait a  
11 minute, that's not what happened, what do we do?

12

13 Malone: That's fine.

14

15 Scherer: Oh, you'll edit it and do all kinds of stuff?

16

17 Malone: Yeah, we'll edit it.

18

19 Scherer: All right, I won't worry about it.

20

21 Malone: All right. Well, let's have you first of all just state your name, your full name and your  
22 birth date.

23

1 Scherer: My name is Lee Richard Scherer and I was born [on] September 20<sup>th</sup>, 1919.

2

3 Malone: Ok. And where were you born, where did you grow up, and what were your parent's  
4 occupations?

5

6 Scherer: I was born in Charleston, South Carolina. At the age of about ten I moved to  
7 Kentucky. My Dad was a mechanical foreman and my mother was just a housewife, or, not just a  
8 housewife, my mother was a housewife.

9

10 Malone: Ok. And as a child did you grow up thinking about rockets or airplanes or were you  
11 interested in planets or space in any way?

12

13 Scherer: Only in a secondary way, I never heard of rockets, but I was a nut about airplanes. I  
14 had one year where I was sick with something and I stayed out of school; I spent most of that time  
15 building model airplanes, so I was very interested in that.

16

17 Malone: All right. Ok. What was the first job that you ever had and did you work while you were  
18 in high school or college?

19

20 Scherer: Only delivering groceries, I did that. In college I had a little side job in the machine  
21 shop.

22

1 Malone: Ok. In 1942 you graduated from the U.S. Naval Academy and you got your Bachelor  
2 of Science Degree in [Marine] Engineering. Is that correct?

3

4 Scherer: .I went to the University of Kentucky for a year and then entered the Naval Academy  
5 and graduated in '42, which was a year early because of the war on and they rushed us out to the  
6 war theaters. I was on a destroyer in the South Pacific and we had a lot of combat there. Then I got  
7 the opportunity to go to flight training, which I did and got out as a carrier pilot just as the war ended.  
8 [In 1948 I went to graduate school and received a master's degree and professional degree from  
9 Caltech].

10

11 Malone: Ok. Well, let's talk about your Navy career and some highlights. How did you end up  
12 going and thinking about getting into the Navy?

13

14 Scherer: My Dad had been in the Navy as an enlisted man and I always loved that idea. I was  
15 very fortunate to win a competitive examination to be selected for the Naval Academy. That had  
16 been an ambition from my earliest [youth].

17

18 Malone: Ok.

19

20 Scherer: And in the war I was on destroyers in a very active time in the Solomon Islands and  
21 was fortunate. A lot of ships were sunk, and fortunately mine wasn't. [Then] I got the opportunity to  
22 go to flight training, in 1944.

23

1 Malone: Now, when you were on the destroyer, what was your position?

2

3 Scherer: I was a gunnery officer.

4

5 Malone: All right. And in the mid to late fifties you worked research and development for the  
6 Navy. Were you involved in the early Navy sponsored launches, the Vanguard or. . . ?

7

8 Scherer: I was given a professional degree [by] Cal Tech. [This degree is] not heard of very  
9 often, but it's a year more than a masters and not quite up to a doctorate. In my Navy career I [had  
10 many R&D] jobs. [One tour] I [was] the technical assistant to the Assistant Secretary of the Navy  
11 [when] he was responsible for the Vanguard, the first U.S. launch vehicle [and] the first one [tried] to  
12 launch. It had several failures and the Jupiter [was pushed] ahead of it, then the Vanguard came  
13 along. So that gave me a strong interest in the space business. I came down here for one of the  
14 Vanguard trials [in 1968] along with President Eisenhower's aide. . . President Eisenhower was very  
15 interested because he knew Sputnik was about to go up and he was [hoping] to have Vanguard go  
16 before Sputnik, which unfortunately didn't happen. But that was my first [visit] to the Cape area,  
17 [and] I was very taken by the whole [situation and plans] that we had.

18

19 Malone: Ok. What'd you think about this area down here when you were down in, for that  
20 Vanguard?

21

22 Scherer: Well, it was pretty vacant at that time. [I think] there was only one motel in Cocoa  
23 Beach to give you an idea. The President's Naval Aide brought the President's Army Aide down, so

1 we all came [to the Cape] together. The Vanguard was all ready to go and they [called a hold at] T-  
2 minus 30 seconds. The last thing to be done was to [eject an umbilical]. [If that didn't work  
3 electrically, a] fellow on a fire truck [was to pull] the lanyard out by hand. [But] the fire truck had  
4 gone behind the revetment and the radio was such that they couldn't get through to him. [They] had  
5 to send a jeep [out to give instructions]. [When they were] ready to pick up the count, clouds [had  
6 come] over [the pad] and they cancelled [the launch] with us sitting there [because taking  
7 photographs was mandatory]. [This was] one of [my] interesting early experiences.

8

9 Malone: Yeah, that still goes on today sometimes, technical problems and then weather gets  
10 you.

11

12 Scherer: Yeah.

13

14 Malone: So. What about Sputnik? Do you remember when you first heard about that and  
15 where you were?

16

17 Scherer: Very well, because I still had the job with the Assistant Secretary of the Navy. [I]  
18 picked up the morning paper and there was a big headline in the Washington Post. I learned later,  
19 of course, the President and probably the President's aides also, knew about Sputnik about to go. I  
20 didn't, [and] I was very surprised. All heck broke loose in our office because my boss was the [point  
21 man on] Vanguard. I had to work with him through several hearings in Congress while various  
22 Congressmen [questioned] what [was] wrong with the education [in] American [and] why are the  
23 Russians so much smarter than we are.

1 Malone: Well, that sounds exciting. What about, when you heard, do you remember when you  
2 heard the creation of NASA, where you were, what you were thinking and. . . ?

3

4 Scherer: Well, I had been sent to Italy on a job doing antisubmarine warfare research. It was  
5 [in] an Italian community. The only news [in English] we had was the Armed Forces Network and  
6 over that I heard that this new agency was being formed. Not too much later I overheard President  
7 Kennedy's talk [in which] he said, we're going to the Moon and return, 'cause it's hard to do. At that  
8 time I [thought], I must have a bad connection here. The radio was coming from Munich over the  
9 Alps to Italy and, the reception was very poor, I said, "I must not have heard what he said  
10 [correctly]".

11

12 (laughs)

13

14 Scherer: But, the interesting thing, in response to your question [is that], I left Italy and came  
15 back and had a job in the Bureau of Aeronautics of the Navy. [Word] came out that NASA was  
16 looking for some senior managers to help them get formed. I immediately volunteered and was  
17 lucky enough to be assigned to NASA headquarters. I was a Navy captain [and still in uniform].  
18 After three years, the Navy asked me to come back. By then I was [the] program manager of a  
19 moon satellite, a moon spacecraft, I decided I'd retire then. There was a [retirement] ceremony at  
20 12:00 and at 1:00 I was [back] again [at] NASA as a civilian [with the same duties].

21

22 Malone: Wow, that's a quick turnaround.

23

1 Scherer: So, that worked out very well. . . . from my personal point of view

2

3 Malone: You were on assignment from the Navy to NASA working in Washington?

4

5 Scherer: Um-hmm (affirmative)

6

7 Malone: Ok.

8

9 Scherer: For three years.

10

11 Malone: All right. And then, why don't you describe what that was like, that program that you  
12 were assigned to, the one....

13

14 Scherer: Well, I was assigned to the Lunar and Planetary Office and I made several trips down  
15 here. The Ranger was my first trip, 1962 I think, [I] was an observer and then I was made the  
16 program director of the Lunar Orbiter. We launched five flights to the moon within one year's time  
17 [(1966)], all of which were successful. That was my first big job with NASA.

18

19 Malone: Ok.

20

21 Scherer: The program director's [job is to exercise] oversight of [the work] centers were doing  
22 and the centers would then manage the contractor actually building the spacecraft. [The job] had a



1 lot of responsibility, but not all the authority [one] might have wanted because of the centers in the  
2 middle.

3

4 Malone: Yeah, the centers are all at different states. It's kind of hard to keep your hands on  
5 what they're doing. . .

6

7 Scherer: Yeah, yeah.

8

9 Malone: . . . from Washington. So what was the environment like in those days when, you  
10 know, sending spacecraft to the moon and. . . ?

11

12 Scherer: Well, looking at it as compared with this day, it was far [less bureaucratic because]  
13 money was no object. [One] could do most anything [one] wanted to. [NASA] was a growing  
14 organization with the public behind it fully. Successes were treated with great [excitement] and the  
15 failures were [accepted as a price for technical advancement]. It's a little different than the reaction  
16 these days, where failure is not an option.

17

18 Malone: So what was your philosophy back in those days when you were in charge of a  
19 program, you had the field centers that were building things and launching? How did you, what was  
20 your management style?

21

22 Scherer: Well, I guess it's, I can't articulate that too well. As a military man I had certain  
23 experiences that made me want to give a lot of orders [but] I was smart enough to recognize you

1 didn't do that [the same way] with a bunch of NASA [civilian] employees. I worked primarily through  
2 the Langley Research Center [and we developed an outstanding relationship]. [I used to joke that I  
3 was] their leader but they [were] way ahead of me.

4

5 Malone: mm-mm, (quiet laugh)

6

7 Scherer: That's the meaning, I forget the words.

8

9 Malone: But still. . .

10

11 Scherer: But we had a relationship [that the administrator said was exemplary]. Both the project  
12 manager at Langley [and I] were given Exceptional Service [Awards]. [The text that goes with it is  
13 signed by] the NASA administrator [and it says] that this was the best spacecraft [program] flown up  
14 to that point in time. That was a quite an honor. [Compared to the tremendous accomplishments  
15 that have followed make the Lunar Orbiter look like a Model T Ford].

16

17 Malone: Now, why do you think it was so successful?

18

19 Scherer: We had a good contractor [in] Boeing. It was [the] first spacecraft they'd ever built.  
20 [Langley assigned outstanding people to the project]. We had outstanding teamwork among us and  
21 [in addition we had a lot of good fortune]..

22

23 Malone: Ok. And then you were also the director of the Apollo Lunar Exploration Office?

1 Scherer: Yes.

2

3 Malone: Now, what can you tell us about what that was like?

4

5 Scherer: Well, after the Lunar Orbiter Program ended in '66, I was asked to join the Apollo  
6 Program. [This] was really a fortunate break from a personal point of view, I had worked on the  
7 unmanned side, now I [was given] a chance to work on the manned side. We established [this] new  
8 office called the Apollo Lunar Exploration Office. Our responsibilities were to work with the several  
9 centers, primarily Johnson, on what man would do on the Moon. How should they explore the  
10 Moon? [and with what equipment]. My group was responsible for recommending the landing sites;  
11 the [final] decision was made at a higher level. [We led] the development of various [scientific]  
12 experiments that the men [carried, including] the Lunar Rover. [We also had oversight over the  
13 analyses of material brought back]. [It was] a very exciting time period. Launching Apollos every  
14 three months kept us very busy, for sure.

15

16 Malone: Well, that must have been an interesting discussion that you would have about what  
17 you would find there, where you might land and. . .

18

19 Scherer: Yeah, yeah. None of us knew [very] much of anything, you know, [before] Apollo 8  
20 and then Apollo 10. I was in the [KSC directors] conference room here yesterday, and I pointed out  
21 the chair I was sitting in after the all day launch readiness [review of Apollo 11, led by] the Apollo  
22 program manager who was General Sam Phillips. [After all individual reports were made] at the end

1 of the meeting he slammed the table and said “It’s decided then, we will launch for the Moon and  
2 return,” we always had to say, “and return.” That was an historic moment for sure.

3  
4 Moore: Ok. What did you think about President Kennedy’s decision to go to the Moon?

5  
6 Scherer: . . . at first I thought it was crazy and then I realized he was a lot smarter than I was. I  
7 think that was terrific in that it started the whole space business for our country. He was right when  
8 he said, we’re going not because it’s easy but because it’s hard and it resulted in the development  
9 of [many] things that we would never have dreamed of if we hadn’t [taken this action]. And it’s scary  
10 to look back and say we wouldn’t have done this and that or the other [if] the public was[n’t] fully  
11 behind it at that time.

12  
13 Malone: Huge interest, just huge interest in the public back then. I guess it’s interesting, there  
14 was just a story the other night about some people still believe we never went there to the Moon.

15  
16 Scherer: I really applauded Buzz Aldrin when he took exception to that.

17  
18 Malone: Yeah, he did, didn’t he?

19  
20 (laughs)

21  
22 Malone: All right. What did you think about the selection about the original Mercury  
23 astronauts? Were you involved in that at all?

1 Scherer: I was on the edges of it. In fact the [friend] that's visiting with me today was an  
2 astronaut applicant. Originally they planned on choosing twelve astronauts and he was in the  
3 twelve, but they reduced it to seven and he fell out. We were just discussing that. I don't know  
4 much about [the details but thought] the criteria for selection was excellent [as shown by the results.]  
5 I don't know much about the physical side of it. I later took the astronaut physical exam when I was  
6 at another job and it's very thorough I must say. I knew all of [the original astronauts. A big favorite]  
7 was Deke Slayton whom I worked with in great detail for many years on other subjects. H[is  
8 passing] was a big loss, but all of them [were] excellent people.

9

10 Malone: Ok. Did you have any other stories on Apollo or the Lunar Orbiter? We're going to  
11 move to your Dryden experience next.

12

13 Scherer: No. We had plans for what would be done through Apollo 20. Then about Apollo 16  
14 or so the decision was made to drop the final three, so I was [thinking about my next job with no  
15 prospects]. [I first led] a study team [to judge] Skylab [experiments]. When I presented our findings  
16 to the manned space people a stranger came into the room and listened to it. When it was over he  
17 [asked me to] come back to [his] office. It turned out that he was [the new] head of the Office of  
18 [Aeronautics and Research Technology] (OART). His name was Roy Jackson. [Back in his office  
19 he said] "I'd like for you to be center director at Flight Research Center." His aide knew I was an  
20 aviator and they were looking for somebody [new for that job]. He then said, "Take your time on the  
21 decision. I know you want to call your wife, but could you tell me this afternoon?" [Roy Jackson  
22 was a type A+ individual]. That afternoon I went home [and] we talked about it. She [asked], where  
23 it [was. I replied] it's out in the desert somewhere. That happened to be a Friday and then I went

1 back to him and said, we can't make a decision [because] we don't know anything about it and he  
2 [said], "okay, take a flight out there this weekend and see what you [can] see and tell me Monday."  
3 So I flew out, walked around the [bustling] city and [cow town of Lancaster and] looked through the  
4 fence at the [Flight] Research [Center]. [They didn't want anybody to recognize me].

5

6 Malone: That must of. . .

7

8 Scherer: I called up a few friends and they said [to] grab it. One of my friends was the Director  
9 of the Langley Research Center and I asked him what he thought. He said, you'll be a big shot in a  
10 little pond, but you'll get to meet and work with all kinds of very important people. That's exactly  
11 what happened. [I also contacted Neil Armstrong who had been stationed there. He said  
12 "Everybody who lives out there loves it." He didn't add that everybody who hates it leaves after  
13 three months.]

14

15 Malone: Ok. So that was 1971 to '75? You were the director at Dryden?

16

17 Scherer: Yeah, uh-uh (affirmative).

18

19 Malone: So what challenges did you face out there?

20

21 Scherer: Well, it's one of the most interesting centers NASA has. It's name of Dryden has come  
22 after I departed. It was just [then] called the Flight Research Center. It's on the base of Edward's  
23 Air Force Base. This is where Neil Armstrong did his [civilian] flying [and where Chuck Yeager

1 made history]. I had the best pilots in the world. I had seven pilots, three of them had gone Mach III  
2 or better. {It's hard to get to with] very few visitors from NASA Headquarters which has certain  
3 advantages.

4

5 (both laugh lightly)

6

7 Scherer: So I enjoyed being an aviator, I got to fly all I wanted to, and it was just a wonderful  
8 situation. Big [concern] out there was flight safety 'cause we were flying [experimental] airplanes,  
9 but fortunately we had no accidents during my tenure, [during] which [there were] over two hundred  
10 research flights.

11

12 Malone: That's great.

13

14 Scherer: . . . you know, just good fortune again. [This is] where they flew the X-15, all the lifting  
15 bodies and. . . did the initial approach and landing tests for the Space Shuttle. [All of the rocket  
16 aircraft landed with no power.] We called [this] dead stick landings, which is really a term for energy  
17 management. [The pilots know their speed and altitude and what distance they can glide to a  
18 landing. From the experience doing this at Edwards, the confidence was gained to land the Space  
19 Shuttle in that manner. One day I had a line] put across the big runway and [had the pilots] see how  
20 close they could come to it after [coming down from] a hundred thousand feet [with no power. One  
21 pilot missed the line by 50 inches!]. So it was wonderful. There were challenges like any  
22 management job, but a fun place, lousy climate. (laughs) It's either 120 degrees or the wind is  
23 blowing about 50 knots [or both].

1 Malone: Yeah, I've been out there. It's kind of cool at night.

2

3 Scherer: It's very cold at night. In fact we were taught to always keep a blanket in [our] car  
4 because it would get so cold that [one] could be in serious trouble if [one] had a car break down  
5 going back to home [across the desert].

6

7 Malone: Did you all live in the town of Lancaster?

8

9 Scherer: Yeah, that's where most of us lived.

10

11 Malone: Yeah. Ok. What about your, did you have any particular anecdotes about that place  
12 that you want to share, any stories?

13

14 Scherer: There were many but some not suitable to put in writing.} The Administrator of NASA  
15 [Jim Fletcher] came out to visit, [his] first time and we set up a lifting body flight. These are  
16 airplanes that don't have any wings, flying bathtubs. They would be carried up on the wing of a B-  
17 52 and at 45,000 feet or so they would be dropped. [The pilot would] light off rocket engines and  
18 then zoom on up 'til the fuel burned out [on the lake bed], do certain tests en route and then would  
19 glide back to the lake bed. So, we got out as close as we dared to where [this pilot] was going to  
20 land and I told [Dr. Fletcher] what to watch for [through binoculars]. Of course an airplane at  
21 100,000 feet [is just a speck even with binoculars.] When it [glides] down low enough [about 5,000  
22 feet] the chase plane picks him up and follows him in. [This] lifting body came around and landed  
23 right where we wanted him to for [viewing]. I looked up and the administrator had his glasses still



1 up. He had followed the chase plane all the way down. He never did see the lifting body (both  
2 laugh) 'til it rolled to a stop [right in front of him].

3

4 Malone: Ok.

5

6 Scherer: There are many stories out there, but too long to go into.

7

8 Malone: All right. Let's see in 1975 we're back to Apollo-Soyuz test project launching from  
9 KSC and the Russian space delegation arrived here apparently the same day that you became the  
10 center director and what'd you think about that after the cold war?

11

12 Scherer: I was sitting out at my desk at Flight Research Center and the Deputy [Administrator]  
13 for Management [at NASA Headquarters], called me and he said, "Lee, I'd like for you to run the  
14 Kennedy Space Center," I nearly fell over backwards. I knew him pretty well and when I got over  
15 the shock I said, "that's twenty times as many people and twenty times as many problems. Why  
16 should I do that?" That was the first thing I could think of, biding for time while I was trying to think  
17 that through and he said, "you should do that because we need you." Now try to answer that  
18 question. Try to make the next argument. I agreed as soon as I could think it through, I didn't even  
19 know Dr. Debus was retiring when I got that word. [I thought it was a tremendous honor to be asked  
20 to follow in his footsteps, so I accepted.] I knew Kennedy pretty well because of the various projects  
21 I had visited and I knew Dr. Debus pretty well and some of the other folks. I got here just as things  
22 were getting hot for the Apollo-Soyuz, so. . . including the, I don't remember the cosmonauts coming  
23 the first day, maybe the record shows that. But, they came soon after I was here and we had a very

1 interesting time with them. They were here about four days, I guess. We worked hard and played  
2 hard too. There is one story about them that I'd like to tell. They all stayed at the Holiday Inn, and  
3 we took a big bus down. [Their] group [was] probably twelve people, a couple of managers, the  
4 cosmonauts, and some KGB people [plus] the general who was the head of their cosmonaut office.  
5 As we got on the bus and I said, "Gentlemen, before we leave does everybody have their cameras?"  
6 Everybody looked at one another and they all looked at the general and he nodded. Everyone of  
7 them got off the bus, back to their room to get their cameras. [The background was that I had just  
8 received an] invitation to visit [the Soviet launch site]. In the invitation, [there were] big letters,  
9 underlined as I remember, which said "Absolutely No Photography Allowed!" So I felt maybe that  
10 told them something about the difference in our countries. Whether it did or not, (laughs) [it made  
11 me feel better]. But the cosmonauts did a lot of work [here] looking at the Apollo [hardware] material  
12 and [asking a million questions]. We all were invited to Disney World and [treated royally]. It ruined  
13 me for going back to Disney World almost because I [learned] they have secret entrances to the  
14 various rides. They can take you underground and [when] you come up you're at the head of line.  
15 And, refreshment stands underneath where you can rest a little bit. We just had a ball and ended up  
16 with all of us going on the paddle wheel steamboat out in the lake and there wasn't anybody on  
17 board but us and maybe six Disney people, not another soul. They served cocktails. That was the  
18 way to end the evening. A funny story, I guess the word got out we were there, but Disney people  
19 kept them away from us until the last stop. We came out of the last, whatever it was, and they had  
20 let kids in for autographs. So these kids came running up to us, three dozen of them, and getting  
21 our autographs you know, and they didn't know who anybody was. They came up to me and I  
22 signed my name and as we walked away, I heard one kid say [to] another, "Who in the world is he"  
23 (both laugh). But [the visit] was a great, great occasion from a work point of view. They saw the

1 orange [groves] and they wanted to stop on the road out to the VAB. We got out of the bus and  
2 [General Shatalov] picked an orange and he started peeling it as we were talking. Then he broke  
3 the orange off into segments and he was giving a segment to each of the cosmonauts and I said,  
4 “Hey, they can all pick an orange, too”. He then told me that they never serve an orange [whole] in  
5 Russia because they’re so expensive, so sometimes at fancy dinners, they put one segment of an  
6 orange on the plate as part of a salad or something. [The cosmonauts] thought that was  
7 tremendous, peeling their own orange to eat. That was nice excitement for them [but] then they  
8 suddenly stopped, an armadillo came out of the orange grove ten feet from us. They had never  
9 seen such an animal before and so, that changed the subject right there.

10  
11 Malone: What was their attitude toward space and flying together in space? What did you?

12  
13 Scherer: All of it very positive. I made several trips to Moscow and there are things that [were  
14 different]. There’s one big [sky]scraper with one flat face [with no windows]. They’ve got a [mural]  
15 of a launch of a Proton or Soyuz that takes up twenty stories perhaps. And they’ve got a museum  
16 that’s magnificent with all kind of instruments and [satellites] they’ve flown. The cosmonauts are  
17 treated like gods or at least [were] on my trip. I talked to several of them about how do they get  
18 public support for the amount of money that’s spent. They said, they have no idea how much  
19 money is spent. No one ever tells the public, so they see only the plus side of space and not what it  
20 costs them. It’s kind of interesting compared to our country.

21  
22 Malone: They are very proud of their space program, aren’t they?

1 Scherer: Very, very proud. Unbelievably so.

2

3 Malone: Ok. What was the culture like here at KSC when you came in as the director? What  
4 kind of challenges did you face or kind of vision.... did you say, I want to go do this or that and. . . ?

5

6 Scherer: Well, you could write a book on some of that, but, my primary challenge was filling the  
7 shoes of Dr. Debus. Dr. Debus had been here for some 25 years or something like that and he'd  
8 started it from scratch on whatever the bulrushes are out there. He had the German background  
9 with their manners and, so, we [had] two completely different kinds of backgrounds. I will say that I  
10 had tremendous support, particularly from the deputy director, Mike Ross. Mike Ross had been Dr.  
11 Debus' deputy for some years, I think it was five years, and he obviously was a prime candidate to  
12 take over the Center and I don't know why he didn't, but he could have been, I'm sure he was  
13 disappointed, but he could have been, not an ally also, but he backed me up to the fullest until the  
14 time he left and helped train me [in] a whole variety of things including [the] people, so. . .

15

16 Malone: That's important isn't it? This is a big place.

17

18 Scherer: He took a tremendous load off my back in meeting these challenges. And we had the  
19 Apollo-Soyuz launch six months later, I guess, and that was a special kind of occasion there. Shall I  
20 go ahead and talk about that....One of the first [questions] that happened well before the launch  
21 [was] who should launch first. We're launching from opposite sides of the Earth and one has to go  
22 first and the other has to catch them. [The Soviets insisted that they go first]. The window for  
23 whoever goes first can be almost any [reasonable] length but the second [team] had a window that

1 was, as far as the minimum energy catch up, [of] thirty seconds, or something like that. During the  
2 count, we had an indication that [one] swing arm might not swing. The indicator that said that it was  
3 ready [was not lighted]. So that [was] a big challenge. You don't launch with the swing arm still  
4 hanging on. The launch director, Walt Kapryan, called a meeting of all the key people. They went  
5 over all the knowledge that they had and they finally decided they had [enough] other indicators that  
6 said it was okay. It was something burned out, but that was a concern. I had an internal closely  
7 held one. Deke Slayton was flying on it. Deke was an original [Mercury] seven astronaut and he  
8 was grounded because he had a heart arrhythmia. He didn't get to fly on Mercury or Gemini or  
9 Apollo. Over the years, medication and age or whatever, [the problem] went away and the doctors  
10 cleared him to fly. The doctor here wondered what would happen during the particular excitement of  
11 a launch. What would [his heart] do at T-minus ten seconds? So we rigged a deal where the doctor  
12 watching his vital signs was going to stand up and look at me and draw a [hand across his throat] if  
13 something happened [that he thought was] dangerous and I would stop the launch. So I had that in  
14 the back of my mind. [We also received] word that the Administrator of NASA and the Soviet  
15 ambassador was flying down for the launch and I had to run out and meet them and bring them  
16 back to the firing room. So, they were standing behind me during [the] count. I wrote an article  
17 about this [launch] that the Navy published, *A Different Kind of Pressure*. [Most of the articles they  
18 publish concern combat experiences so] I said this [was] a different kind of pressure. I wasn't in  
19 danger of dying except from mortification or something. But everything worked beautifully as you  
20 know. [Well almost] most everything. The Soviet camera didn't work [in space] so we only had  
21 camera pictures from one point of view.

22  
23 Malone: But we shared them I'm sure.

1 Scherer: [Of course.]

2

3 Malone: Ok.

4

5 Scherer: So [Apollo Soyuz was] a very interesting experience [for me]. [Many of us] made  
6 some great friendships that ended up with Christmas cards and that sort of thing.

7

8 Malone: Ok. You talked about coming in and filling the shoes of Dr. Debus here at KSC. What  
9 was your impression of him? You mentioned you had known him. . .

10

11 Scherer: Well I didn't know him very well. I was in many meetings with him, but not having  
12 worked for him I didn't know him [well], but he was a ball of fire. He and I only had one [difference of  
13 opinion] from a professional point of view. One of the experiments we put on Apollo, that my office  
14 was [responsible for, had a nuclear thermal generator, a little nuclear power generator for the  
15 experiment. Dr. Debus insisted [that] the [launch] invitations that went out include a flyer [that] there  
16 [could] be nuclear material [on the vehicle, so they were duly warned]. He [also] built some  
17 sprinklers [along the road where cars could be washed off if the launch exploded and radioactive  
18 material fell on them]. He was more conservative than I would have been in that case. Fortunately  
19 we never tested [who might have been right].

20

21 Malone: Ok. Well did you feel like you were coming into KSC to kind of start a new agenda or  
22 just, as you said, six months you had the ASTP launch and you were here until '75, so what were  
23 your thoughts about what you were going to do?

1 Scherer: No, you know, sometimes when they change commanders, the top bosses [suggest  
2 certain things that should be changed]. I had no indication of any problems that ought to be worked,  
3 so with Mike Ross who was well experienced in all of the culture and [procedures] supporting me  
4 strongly, things went smoothly. I was smart enough not to get too much into the ASTP [other than]  
5 getting some briefings, because that was all set up and I wasn't about to modify anything. I thought  
6 the transition went [well]. After that launch a number of the key people decided to retire [because] it  
7 was a good time to go out on an upbeat. My challenges [primarily] were picking their [replacements  
8 initially].

9

10 Malone: Ok. Now. . . during your tenure here as center director there were interplanetary  
11 probes like the Viking to Mars that we were getting ready for that too. Do you have any  
12 recollections?

13

14 Scherer: Well, during my tenure we launched 56 satellites, so that's an average of a little over  
15 ten a year. The big four were the two Voyagers and then the two Vikings that landed on Mars. The  
16 Voyagers are still working out of the eclipse. On the Viking to Mars, we were trying to launch two of  
17 them in one ideal period for Mars [location]. We got the first one off successfully. Then for the  
18 second one we were running out of time, it was soon going to be too late to reach Mars and we'd  
19 have to wait twenty-six months. Came the day of the launch [and] a big storm came up. I was  
20 talking to the weather people and this young Air Force captain [said], "Sir, it'll arrive at the launch  
21 pad in three minutes", and the time was T-minus two minutes. [John Neilon] continued the count  
22 and got it off [successfully]. The storm hit right afterwards, we couldn't even go [outside to] watch

1 anything. I was stuck in the firing room over at 41. It was raining [so] hard [I] couldn't even go to  
2 [my] car [for an hour].

3

4 Malone: Ok. What about the twin Voyager spacecraft and . . . ?

5

6 Scherer: I've got one little side story. I got a call [the night before the launch]. My secretary  
7 said, the FBI wants to talk to you. I picked it up and this guy [said] "I'm the head of the FBI in the  
8 State of Florida. I need to see you. Meet me at the Holiday Inn at 9:00." He was in Tampa. So I  
9 went down, full of questions in my mind. He said, "You're going to have a visitor tomorrow". I said  
10 "We're going to have thousands of visitors tomorrow." He [continued], "but this is the meanest SOB  
11 in the world." And I said, "who might that be?" It was the Dictator of Paraguay [who] decided that  
12 he wanted to see a launch. So [the next morning my deputy, Gerry Griffin, and I are at] the skid  
13 strip. This old propeller driven airplane [landed]. [It was] an Electra [an aircraft we had gotten rid of  
14 many years before]. We pushed the [staircase] up and the door opened. The first thing that  
15 happened [was] four guys with submachine guns came running down. [We were] standing in line  
16 ready to shake hands and they ran right by us and set up guard [positions] looking [out] at the  
17 jungle. Then [a] man appears at the [doorway]. He [stood] there and poses a minute [then] he  
18 comes down the ladder. I stepped forward and [said], "El Presidente, Welcome to KSC." The two  
19 others greeted [him] and I [hustled] him [over to] the car that we had [(an old checker taxi)] and  
20 seated him. Just as I was ready to close the door he points up [to the aircraft] and says "El  
21 Presidente!" The first guy was [just] a decoy. So I pulled him out of the car, ran back to the ladder,  
22 start[ed] over again, "El-Presidente". This [real] president was a mean looking [guy who] didn't say  
23 a word. Just had this, sort of a [half] sneer on his face. He had been a Nazi [in] Germany and had



1 [fled] to Paraguay. [Over the years he] took over the country and had been a [very] strong dictator.  
2 Gerry Griffin and I rode with him 'til I got off to go to the 41 firing room and Gerry went with him to  
3 view [the launch] from the causeway. We took along a beautiful [and expensive] model [I] had [in  
4 my office] of the Titan-Centaur. [Gerry] showed him how [the engines] would burn and how it would  
5 stage. He then said his first word, "Gracias," he grabbed the [model] and [handed] it [out the  
6 window] to his aide who ran to the car behind him. (laughs) Gerry was afraid to ask for it back; his  
7 name was Alfredo Stroessner, and he was deposed a few years later and was exiled [to] Argentina.  
8 Somewhere down there [sits] our Titan-Centaur, I suppose, on display.

9

10 (Malone laughs)

11

12 Malone: Well, that's an interesting story.

13

14 Scherer: That's my story about Voyager [except to add both launches were successful and the  
15 missions have been outstanding]..

16

17 Malone: Ok. Well that's probably a good time to change tapes. Ok.

18

19 {tape change}

20

21 Malone: Ok. All right. We'll talk about the bicentennial exposition in 1976 being here at KSC.  
22 What was involved in hosting that here?

23

1 Scherer: Well, that was an unbelievable thing. A gentleman came down from the White House  
2 and he asked to have a tour. I found out later he worked [behind the scenes] for President Ford. [In  
3 fact] he [had been] President Ford's roommate in college. We gave him a tour and [afterwards] he  
4 came back to my office [and said], the President wants to have a bicentennial exposition and I'm  
5 going to recommend that they do it here. [I replied, "That's a great idea. It's a shame there is not  
6 enough time." ] The next month I was invited to the White House. [When] I got there [I found] about  
7 twenty people had been invited. [Our earlier visitor was in charge]. He said, "Gentlemen, there's  
8 going to be an exposition at the Kennedy Space Center and each of you are to submit an exhibit".  
9 [The others] were representatives from all of the major departments of the government, [like]  
10 Interior, Commerce, and of course the DOD and NASA. [It was then] January and he [said] "the  
11 President wants it open on [the] 30<sup>th</sup> of May". The man from Commerce, who [is responsible for  
12 major U.S.] expositions, said "what you've suggested be done will take at least two years." [The  
13 chairman, (who was a little hard of listening I think), said, "[I think} NASA can do anything". So we  
14 suddenly had months to put together a major exposition. Fortunately, we were not too busy  
15 developing Shuttle facilities and I could put a lot of people on it. [I assigned my deputy, Mike Ross,  
16 as the leader.] The other agencies [got behind it] and we had thirteen major areas.

17

18 Malone: Pavilions?

19

20 Scherer: Geodesic domes, [each 125 feet in diameter] for [the] various departments. [Each] put  
21 together a good exhibition [of science and technology. The exposition] ran from May 'til Labor Day  
22 and we had seven hundred thousand visitors in that period of time. That's when the [American] flag  
23 was painted on the VAB as a matter of fact.

1 Malone: Ok. And then KSC started planning modifications to the facilities to switch from Apollo  
2 to support the Shuttle. What do you remember about those challenges?

3

4 Scherer: Well, the basic premise was that we'd use all the equipment that we had that we could.  
5 [Take] the launch platform, for example. The holes for the flame were in the wrong place. That was  
6 all rebuilt, [but the external structure was usable]. We could use the [launch] pad [base], but not a  
7 whole lot else. We had to build the gantries and the Rotating Service Structure and so on. It was a  
8 pretty busy time for many of the workers here. But obviously they met the schedule that they needed  
9 to meet.

10

11 Malone: Ok. You go down in history as flying the first aircraft to land at the Shuttle Landing  
12 Facility back when it was built to support Shuttle. What was that like and did you think about you  
13 being the first one?

14

15 Scherer: [I love to fly so this gave me an excuse]. It was my landing facility, I said to myself, [I'll  
16 land first]. We owned a Beechcraft [airplane] that I was very familiar with and I had the chief pilot  
17 bring the plane over to the skid strip. I made about four landings over there with nobody to see me  
18 but the alligators. Then went over to the strip and made two touch and go's and then a full stop  
19 landing. There was a busload of people that had come out to watch it. [There were] a couple of  
20 reporters there [who had a few questions]. I said "That is the most unimportant landing that'll  
21 [probably] ever be made at this facility."

22

23 (both laugh)

1 Scherer: It was quite a thrill. I was a carrier pilot so I'm used to landing in small areas. That  
2 runway goes right on out over the horizon.

3

4 Malone: Very long, yeah. Ok. President Carter visited Kennedy Space Center to present the  
5 Congressional Space Medal of Honor to some astronauts here. What do you remember about his  
6 visit here?

7

8 Scherer: Well that was a big day here and I can remember a great number of things. President  
9 Carter [as] Governor Carter, had come down here and called me [before his election] and he said,  
10 "I'd like to come out to the cafeteria and campaign" and I said, "I'm not allowed to let you do that, but  
11 if you come back as President we'll lay out the red carpet for you."

12

13 (both laugh)

14

15 Scherer: So, sure enough, that's what I told him when we greeted one another....that we've got  
16 the red carpet laid out. I took him and his wife and his daughter, Amy, [to the major KSC facilities]. I  
17 put an expert at each facility. We went out to the launch pad. There wasn't anything in the OPF at  
18 that time [so] nothing to show him there, but the launch pad had been modified considerably. [Then]  
19 into the VAB where [we] went up onto the launch platform. That's hard to do when the lady is  
20 wearing high heel shoes and there are all kinds of projections around (laughs). Anyhow, nobody  
21 fell. [We] ended up in the LCC. [Finally we went into the VAB] where we had rigged a stage and  
22 [suspended] an Orbiter [held] by [a] crane as a backdrop. It made a beautiful setting. We were able  
23 to get maybe 5,000 people in there. I wanted to hold it outside on the parking lot and the Secret

1 Service said, "Are you crazy, you can't have the President standing with that great big building  
2 behind him. [He won't look presidential.] He's got to have a better background." (laughs) So they  
3 put it inside. Then they realized they had to inspect every room in the VAB for explosives and stuff  
4 and they had a lot of people working to do that. The ceremony [awarding Space Medals of Honor to  
5 seven astronauts] went off beautifully. We couldn't take him over to the [Air Force side] so I was  
6 asked to fly with him on the helicopter, pointing out where [various historic launches had occurred].  
7 [We then flew] over to Disney World where he's giving a speech that night and when we landed at  
8 Disney World it was raining cats and dogs. [Probably 50] people were lined up to greet him. [The  
9 group] put their rain clothes on [and] went out the door. I started out the door and the pilot [said],  
10 "Sir, there's no sense in you getting out in that stuff, it'll stop in ten minutes probably. Why don't you  
11 sit in the President's chair?" Big, fancy chair and, with its Presidential seal [on the head rest] so I  
12 sat in the President's chair and the pilot said, "Orderly, bring him whatever he wants to drink." So  
13 they brought me a scotch and soda and I sat there, watching this pouring rain through the window  
14 and toasting the assorted people. In ten minutes they were all gone, the rain stopped and I was  
15 able to come back home. But for five minutes there I was in the seat of power.  
16  
17 (both laugh)

18  
19 Malone: Do you remember when the first Shuttle came here at KSC? What challenges did  
20 KSC face with that new Orbiter, a new vehicle?

21  
22 Scherer: Well, the Shuttle production was quite a bit behind schedule and the people in  
23 Washington and the contractors decided to bring it here and finish it up here, [that is] finish building

1 it here [at the same time] they were testing it. I suppose that was the right decision [to save time].  
2 We'll never know because, from our point of view it'd [have] been better if they'd finished it out on  
3 the west coast. So when it arrived it looked very bad. If you look at pictures of it, pieces of tile are  
4 missing [for example]. I remember I made a talk to those that [were spectators]. One of my  
5 statements was, like a good bottle of wine (there was an advertisement on TV at that time) like a  
6 good bottle of wine the Shuttle will not be launched before its time (laughs). So we had a pretty good  
7 management problem of finishing up. Doing the testing with two different groups of people from  
8 Rockwell, who didn't always [agree]. The test people [would] want to test something, the production  
9 [people would want to work on the same thing]. There were two leaders of two [Rockwell] groups  
10 trying to finish the Shuttle; that was a kind of a hectic time.

11

12 Malone: That team got it all ready though, didn't they? And you were actually a guest here for  
13 the first launch back in 1981. You had left the Agency.

14

15 Scherer: That was a big thrill, a very big thrill to come back and watch all this come to fruition.

16

17 Malone: What were your impressions then, after having seen so many other launches with  
18 different vehicles, when you saw the Shuttle launch?

19

20 Scherer: Well, it's pretty, it's spectacular, I never think it's quite as spectacular as the Saturn V,  
21 at least the way it affects the body. The Saturn V I felt like my ribs were going in and out, but it is  
22 magnificent to watch.

23

1 Malone: Ok.

2

3 Scherer: It goes off a lot faster than the Saturn V did which was very slow. It took about ten  
4 seconds to clear the launch pad. The Shuttle [has a much better thrust to weight ratio.]

5

6 Malone: Did you think that back in '81 we'd still be flying the Shuttle today in 2002 and. . .  
7 ?

8 Scherer: I would not have guessed that, no, but there hasn't been anything any better. And it  
9 costs too much for something better.

10

11 Malone: Yeah.

12

13 Scherer: If we knew how to do it.

14

15 Malone: During your time here at KSC what do you think you're most proud, what aspect of  
16 your work here?

17

18 Scherer: Well I can't think of any one single thing. I think our record was very good. We had  
19 three failures [as] I remember, out of the 56 launches or 57 maybe with the ASTP. . . and we were  
20 able to get most of the Shuttle facilities finished while I was here, so I'm just proud of [our progress]  
21 in that period of time.

22

1 Malone: Did you have anything in particular that was most frustrating with the politics or  
2 bureaucracy or any other aspect in your tenure here?

3

4 Scherer: No. I [don't]. The normal frustration of having to go to Congress and beg for monies  
5 and that sort of thing [was the responsibility of NASA Headquarters. I had been there and done  
6 that.]. One thing I was proud of is, I felt I did and my people did, worked very well with the other  
7 centers. Some of the [other] centers [have] too much of a rivalry. [Some pundit said each tries to  
8 be] a fiefdom. But I preached and we tried our best to help everybody [equally and] to doing our job  
9 and not have a lot of rivalry [with others]

10 .

11 Malone: Ok.

12

13 Scherer: We were a service organization sort of. [There is another behind the scenes thing that  
14 I'm proud of. All major contracts like those for many millions of dollars have to be approved at  
15 NASA Headquarters. I saw many other centers being sent back to the drawing board time and  
16 again. During my tenure not a single one of our efforts was rejected on our first try. That speaks  
17 highly of the work of our contracts and procurement people and others who often don't get  
18 recognized].

19

20 Malone: Do you have any particular key moments that were most memorable while you were  
21 here. I know you had a lot of things happen.

22



1 Scherer: Yeah, the most memorable moment was sitting in the President's chair drinking his  
2 scotch. . .

3

4 (Malone laughs)

5

6 Scherer: . . . while he was getting wet.

7

8 Malone: Do you have any particular opinions about the space program that you might want to  
9 share with us – or of civil space exploration in general?

10

11 Scherer: No, I don't have anything profound to say about it. I look at how difficult it is to get a  
12 new program or to fix a sick program today as compared with twenty [or thirty] years ago it was, and  
13 the difference is [like] night and day. I regret that, but I guess that's life. In terms of what we do  
14 next, my favorite happens to be a Moon base because my group when I was in the Apollo Program  
15 [ran] a lot of [studies] on how to construct a Moon base. What [one] could do with the resources that  
16 one finds on the Moon. [Much] of it's pretty exciting. I don't know if that'll ever happen, but that's. . .

17

18 Malone: That's what you hope would. . .

19

20 Scherer: I hope that. . .

21

22 Malone: . . . be the future.

23

1 Scherer: . . . eventually at least.

2

3 Malone: Do you have any thoughts about in the next fifty years what would you expect that  
4 humans would have done in space by then?

5

6 Scherer: In fifty years, you said?

7

8 Malone: Yeah.

9

10 Scherer: Well one way of doing that is [to] look at what we did [these] last fifty years and  
11 extrapolate that. I don't know whether that will work or not in this business, because the next steps  
12 are very difficult or most of them at least, [and the manned exploration is extremely expensive].

13

14 Malone: A lot of variables in there.

15

16 Scherer: Yeah. And then the [requirement of] public support and Congressional support – it's  
17 really hard to say [what the future holds].

18

19 Malone: Ok.

20

21 Scherer: And what wars may come along.

22

23 Malone: Ok.

1 Scherer: It's very exciting when you think about Mars and other things. I saw some pictures  
2 yesterday, [suggestions] of water on Mars. That's a key element that they'll find some sort of life  
3 there, microbes or maybe, but. . .

4

5 Malone: Ok. You left the Agency and then started working for the private sector. How would  
6 you kind of describe that, the differences between the two and what you did after leaving NASA?

7

8 Scherer: Well, [initially] I worked as a president of a small company locally and with exciting  
9 promise [but we] ran out of capital so that didn't work so good. I got an offer from General  
10 Dynamics to come to San Diego and start their commercial launch program using the Atlas to sell  
11 launches to the public [and not just to the government]. That was something that I was very  
12 interested in and we did that [for the rest of my career]. The whole [launch] business now has  
13 changed completely. I mean, a large profitable commercial [launch industry] has been built. There  
14 are a number of companies doing it now. [As to the] differences in working, I guess one thing is if  
15 the boss has some problems with [a poor worker] he can fire him.

16 (both laugh)

17

18 Scherer: And the civil service rules are so strict that that can't happen, or it can [only] happen  
19 over a ten year period or something. That is a [major difference in] government management  
20 versus contractor management. Now the negative side of that is if the boss doesn't like the  
21 employee's wife or something, he can still fire him. [The onerous bureaucracy on both sides is  
22 similar].

23

1 (both laugh)

2

3 Scherer: People management is the biggest difference I think and then of course [there is] the  
4 profit motive. You have to do that commercially and in the government you don't. It makes a  
5 difference on how you make decisions for sure.

6

7 Malone: Ok. You mentioned you wanted to talk about your five minutes of glory if we had time.  
8 I think. . .

9

10 Scherer: Well that was when I was sitting in the President's chair.

11

12 Malone: Ok. We got that story then.

13

14 Scherer: You can't tell much bigger than that.

15

16 (both laugh)

17

18 Malone: All right, you mentioned earlier that you had written some material to leave on to your  
19 children about some of your experiences. Why don't you tell us about that a little bit?

20

21 Scherer: Well I had so many funny things happen of which I mentioned [here] two or three out  
22 of a hundred, I wrote a [little] book called, "A Funny Thing Happened While Becoming a Space  
23 Pioneer." My kids were about 11 and 12 when I got into the space business and when I'd do

1 something really dumb, like I hit the garbage can with my car one time and they [would] say, can  
2 you imagine a space pioneer doing something that stupid, or [if I] couldn't find my glasses and  
3 they're on my head, they'd say, and this guy [sent] men to the Moon. So this is a series of  
4 anecdotes of all kinds of funny things that happened. And then they asked me to write a biography,  
5 so the second one is an autobiography of when in from the time I was born, from the time my  
6 parents were born 'til today.

7

8 Malone: Ok. One of the things that we're finding and it's still true today, the pace of work is  
9 pretty hectic out here at the Space Center and I'm sure it was back when you were here too. . .

10

11 Scherer: Umm-hmm (affirmative)

12

13 Malone: . . . at certain periods of time. Did you strike a balance between personal life and  
14 having enough time to do what you wanted to do away from work versus staying at work too much?  
15 Do you have anything you might want to say about that?

16

17 Scherer: I think I [struck a balance here]. I worked longer hours at NASA headquarters than I  
18 did here. I guess as you get older you tend to realize that you ought to stop and smell the flowers a  
19 little bit and I tried to do that. I didn't work on weekends very often [except during launch periods].  
20 At NASA headquarters I was always working [on Saturdays] to write or finish a Congressional  
21 statement or something like that. I hope we had a reasonable balance. [A] thing that's true is that in  
22 the space launch business you have many periods of not a whole lot to do [in some sectors]. It's  
23 important to try and find something to keep them occupied for the good of the Center and for the

1 personal good of each of them. And nothing worse than sitting around and looking for some  
2 [productive activity]. That's difficult to do here in certain times and certain [segments of the center].

3

4 Malone: Our work force has shrunk so much today that a lot of people are doing two and three  
5 different jobs today than what they. . .

6

7 Scherer: Yeah, I'm sure it's very, very busy today. When you didn't have manned launches  
8 there was a different pace.

9

10 Malone: Yeah. You had a big work force here to support Apollo and then. . .

11

12 Scherer: Yeah, and then they went down but they didn't go down probably as much as they  
13 might have been able to. I don't know. It's hard to judge.

14

15 Malone: Were you here when they had the reduction in force, here at KSC, or was that before  
16 you arrived or after?

17

18 Scherer: That, well there was a big one before I came. We didn't have [anything major] when I  
19 was here, just normal attrition I think, 'cause [the big hit had] already been done. The contractor  
20 force furlough more than the civil service force. [We all need a certain] quality of life. Of course  
21 there was always some people, who are workaholics and you can't stop them. You just have to let  
22 them do what they want to do. [I receive the KSC newsletter and I'm very impressed to read of all  
23 the many adjunct activities that subsequent Center Directors have set up].

1 Malone: Ok. Did you have any other stories or anecdotes you want to share with us today  
2 about your tenure at KSC or within NASA?

3

4 Scherer: [I have a lot of stories but I can't think of anything short enough to] keep within our time  
5 constraints.

6

7 Malone: Do you have any other questions. . . All right. Well, that's very good. We appreciate  
8 your helping us out today.

9

10 Scherer: You're very welcome, Ma'am.